

Amendments to the Abstract:

Please insert the following abstract into the application as the last page thereof:

The present disclosure provides compositions and methods for direct transfection of organelle DNA in living cells. More particularly, the present disclosure is based on the use of viral vectors that contain localization signals specific for the target organelle. In one embodiment, a viral vector that has been modified to express on its surface a protein transduction domain and an organelle localization signal is provided. A viral vector comprising a desired recombinant DNA construct is introduced into cell culture or injected into an organism, wherein the viral vector transduces across the cellular membrane through its protein transduction domain and localizes to the cellular organelle by way of the organelle localization/targeting signal introducing the recombinant DNA into the interior of the organelle